

**REMARKS**

Reconsideration of the subject application is respectfully requested in light of the comments which follow. Claims 2-13 and 15-23 are pending.

***CLAIM REJECTIONS UNDER 35 U.S.C. §103***

Claims 2, 3, 5, 6-10, 13, 15, 16, 19, 21 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,419,088 to Nemec (hereafter "*Nemec*") in view of WO 00/18583 to Trovinger (hereafter "*Trovinger*") on the grounds set forth in paragraph 3 of the Official Action.

This rejection should be withdrawn because the proposed combination does not establish a prima facie case of obviousness as required by MPEP §§ 2143-2143.03. Under MPEP §§ 2143-2143.03, there are three basic criteria to establish a prima facie case of obviousness. These include 1) a suggestion or motivation to modify the reference or to combine the teachings; 2) a reasonable expectation of success for the proposed modification or combination; and 3) the references must teach or suggest all of the claimed limitations. Here, the rejection is deficient in that there has not been shown any motivation to modify the references in the manner proposed and there has not been established that there is a reasonable expectation of success.

Exemplary embodiments of the present invention are directed to methods of folding sheet material and to a sheet folding apparatus using a pinch foot, fold rollers and a fold blade. Fig. 1 illustrates an exemplary apparatus for folding sheet material 100. The exemplary apparatus 100 includes a fold blade 104 having a longitudinal axis along the X-axis of Figure 1A. The fold blade 104 can be fixed or can

alternatively be movable. The apparatus 100 also includes two fold rollers, shown in Figure 2A as two fold rollers 206, but can alternatively be of any number. In further reference to the exemplary embodiment of Figure 2A, the fold blade 204 is positioned in a plane which passes between the two fold rollers 206. Exemplary fold roller 206 rotates about an axis parallel to a longitudinal axis of the fold blade. The fold roller 206 can be a single fold roller or it can be multiple sub rollers having a cumulative length of at least the length of a desired fold. The apparatus further includes a pinch foot 220 elastically mounted in a housing 202. The fold rollers 206 can also be mounted in the housing 202.

In operation, sheet material is fed into an area between the two fold rollers and the fold blade. The sheet material is clamped against the fold blade with the pinch foot. A drive means moves the fold roller and the fold blade relative to one another. This motion forms a fold in the sheet as the fold blade is placed in operative communication with the fold rollers. The fold rollers rotate about an axis parallel to the longitudinal axis of the fold blade during insertion of the fold blade and rotate in a reverse direction when the fold blade and the folded sheet are removed from between the fold rollers. Concurrently, the pinch foot maintains the clamping of the sheet material against the fold blade as it is retracted into the housing. Retraction is along an axis perpendicular to the sheet material and parallel to the direction of relative motion between the fold blade and the fold rollers. The clamping of the sheet material by the pinch foot during the relative movement of the fold blade and the fold rollers assists in precision placement of the fold in the sheet material, e.g., the sheet material is not displaced by initial friction with either one of the fold

rollers as the sheet material comes into contact with the fold rollers during a folding operation.

The foregoing features are broadly encompassed by Applicants' independent claims 21 and 23. These claims are directed to an apparatus for folding sheet material and a method for folding a sheet of material. As recited in claim 21, a method for folding a sheet of material comprises the steps of, *inter alia*, feeding a sheet material into an area between two fold rollers and a fold blade, clamping the sheet material against the fold blade with a pinch foot, and moving the fold rollers and the fold blade relative to one another to form a fold in the sheet using the fold blade. The fold rollers rotate about an axis parallel to a longitudinal axis of the fold blade. The fold rollers rotate about an axis parallel to a longitudinal axis of the fold blade. The pinch foot retracts into a housing and maintains a pressure against the fold blade as the fold rollers and the fold blade move relative to one another and the pinch foot is stationary with respect to a longitudinal axis of the fold. Claim 23 recites that the apparatus for folding sheet material comprises, *inter alia*, a fold blade, two fold rollers, a pinch foot for clamping against the fold blade, and drive means for moving at least one of the fold blade and the fold rollers into operable communication with one another, wherein each of the fold rollers rotates about an axis parallel to a longitudinal axis of the fold blade. The pinch foot retracts into a housing and maintains a pressure against the fold blade as the fold rollers and the fold blade move relative to one another and the pinch foot is stationary with respect to the longitudinal axis of the fold blade

The *Nemec* patent discloses a gate folding apparatus having a folding table 11 with a central opening and a pair of fold rolls 21, 22 located below the opening forming a nip. A vertically movable gate assembly with a blade 31 is located parallel

to the fold rolls 21, 22. In operation, a sheet 10 is conveyed over the opening and under the blade 31. The gate assembly is lowered and the blade 31 engages the sheet 10 in a crease zone and drives the sheet 10 down between the nip formed in the fold rolls 21, 22. The fold rolls 21, 22 rotate to draw the sheet material from the nip through the opening between the pair of fold rolls 21, 22.

The Official Action relies upon the combination of disclosures in *Nemec* and *Trovinger*. The Official Action states that *Nemec* does not disclose a pinch foot that clamps against the foot blade. The Examiner therefore relies upon the disclosure in the commonly assigned *Trovinger* patent and alleges that it is well known in the art of folding to provide a pinch roller. However, the Examiner has not established any motivation as to why one of ordinary skill in the art would have combined the two disclosures in the manner advanced in the Official Action.

Specifically, the apparatus disclosed in *Nemec* biases a prefolded sheet 10 between fold rolls 21, 22 to form a gate fold along transverse centerline 10c (column 2, lines 61-63). The gate fold is formed by ***driving the prefolded sheet 10 through the fold rolls 21, 22***. See Fig. 9a and column 5, lines 50-54 (emphasis added). In contrast, the apparatus disclosed in *Trovinger* holds a sheet of paper against a fold blade as the fold blade ***reciprocates between fold rollers*** and places a fold in a sheet. The sheet ***enters and exits the fold rollers from the same side and does not pass through the fold rollers***. Indeed, the pinch foot of *Trovinger* is pressed against the fold blade to assist in precision placement of the fold in the sheet material and, if combined with the apparatus disclosed in *Nemec*, would prevent the paper from passing completely through the fold rollers as in *Nemec*.

Because the principle of operation of *Nemec* is different from that of disclosed in *Trovinger*, it is respectfully asserted that no motivation for the proposed combination has been shown. Furthermore, the likelihood of success of the proposed combination is in question because it has not been shown how the pinch foot operation of *Trovinger* is compatible with the pass through operation of *Nemec*. For at least this reason, the rejection is improper and should be withdrawn.

Moreover, the proposed combination of *Nemec* and *Trovinger* is improper as a basis for the obviousness rejection because the proposed modification renders one or the other cited references unsatisfactory for its intended purpose.

For example, if the pinch roller assembly 231 of *Trovinger* were to be placed in the apparatus of *Nemec*, then the centerline folded sheet 10 of *Nemec* would no longer be able to pass through the fold rolls 21, 22 as described in *Nemec* at column 5, lines 50-51 and Fig. 9a. Therefore, the proposed combination results in *Nemec* being incapable of functioning as intended.

The MPEP notes that a combination of references resulting in a prior art reference being unsatisfactory for its intended purpose is improper. See, MPEP §2143.01. Here, the combination proposed by the Examiner would result in the pinch rollers of *Trovinger* preventing the centerline folded sheet 10 of *Nemec* from passing through fold rolls 21, 22. Accordingly, Applicants respectfully request the withdrawal of this rejection.

Claims 11, 12, 20 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Nemec* in view of *Trovinger* and in further view of U.S. Patent No. 3,954,258 to Skipor et al. (hereafter "*Skipor et al.*") on the grounds set forth in paragraph 4 of the Official Action. This rejection is improper for at least the same

reason as discussed above with respect to the proposed combination of Nemec and Trovinger. Furthermore, the portions of Skipor et al. relied upon by the Examiner do not overcome the above-noted deficiencies in the Nemec and Trovinger combination. Accordingly, this rejection should be withdrawn.

**ALLOWABLE SUBJECT MATTER**

Applicants note with appreciation the indication of allowable subject matter in objected claims 4, 17, and 18. However, by the present response Applicant respectfully asserts that current independent claims 21 and 23 distinguish over the applied references and are therefore allowable. All presently pending claims depend from allowable claims 21 and 23 and are therefore themselves also allowable.

**CONCLUSION**

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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